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ABSTRACT

This document contains highlights from a 1-day conference designed to foster research in vocational-technical education and related fields. The following major presentations served to stimulate the attainment of the conference's objective: (1) "The Redirection of Educational Research in Vocational-Technical Education" by D. Bob Gowin, which recommends a change in current research procedures so that researchers select phenomena to study that pass as educational phenomena, (2) "Research Priorities in Vocational-Technical Education" by John K. Coster, which discusses six research priorities, including evaluation, the decision-making process, and articulation, (3) "Research in Vocational-Technical Education: Economic Implications" by Jacob J. Kaufman, which stresses the need to apply economic principles to education, and (4) "Research Dimensions in the Career Education Model" by Cornelius Butler, which discusses three of the four career education models, including the school-based, employer-based, and home-community based models. (SB)

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REFLECTIONS

RESEARCHERS CONFERENCE IN VOCATIONAL-TECHNICAL EDUCATION

ED 070711

Highlights of the Researchers' Conference in Vocational-Technical Education, October 29, 1971.

SPECIAL REPORT

MARCH, 1972

Sponsored by the New Jersey State Department of Education, Division of Vocational Education, in cooperation with Ocean County Area Vocational-Technical School.

Bureau of Occupational Research Development

Division of Vocational Education

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CONFERENCE PURPOSE

In today's rapidly changing society with its inherent technological advances, change becomes a major problem for educators. Vocational-technical educators in particular, face a major task of constantly reviewing curriculum offerings in light of these changes. Once the selection of desired changes has been accomplished, it is then necessary to provide means for implementing them in ways which will create maximum impact on the educational process and product.

It was with this thought in mind that the Researchers' Conference in Vocational-Technical Education was sponsored by the New Jersey State Department of Education, New Jersey Division of Vocational Education, in cooperation with the Ocean County Area Vocational-Technical School. The general goal of the Conference, "to stimulate research in vocational-technical education and related fields," was formulated with the desired outcome anticipated that if change and the implementation of those changes is to take place it must be done through the utilization of research and research findings.

To provide the launching pad for the attainment of this goal, four experts in research from somewhat diverse backgrounds and interests were invited to make major presentations. Those presentations are reproduced for your consideration in the body of this paper.

It is hoped that the stimulating and thought-provoking comments presented by these speakers will motivate additional persons in New Jersey who are interested in improving the educational climate to not only carry out their own research, but to more fully utilize existing research data.

Harold R. Seltzer
Director
Bureau of Occupational Research Development

". . . change becomes a major problem for educators."

VT 017611

Dr. Morton Margules
Associate State Director
Vocational-Technical Education

". . . must feel a kinship to the broad movements within American education."

INTRODUCTION TO THE CONFERENCE THEME

I too want to add to the welcomes that have been given here this morning. It is rather gratifying to see that in the State of New Jersey we can gather together in one place a hundred people that are interested in vocational-technical education research. This is the first time I know of that vocational education researchers have surfaced to the point where we now know that we can move forward with this particular activity in the State. We do hope that each and every one of you will leave here with a mind set that will say I am going to start a research project. We do hope that is one of the outcomes of this particular conference.

Our Bureau of Occupational Research Development was first initiated in 1965 by a grant received from the federal government. Since that time we have worked very diligently to motivate, to encourage, and to support those people who are interested in vocational-technical research projects for our state. We have been rather successful in a very limited way in providing the wherewithal for people to do research in vocational-technical education. Some of the end products of these past few years are visible right here in the research studies that have been undertaken by our college educators and by some of our doctoral students whom we have very happily supported. I will leave these available so that you can peruse them, but they are not to be taken as your own. Some of them are in very short supply.

In addition to the studies we have prepared a pamphlet that will give you guidelines, should you wish to propose a research study. That is the green covered book. I think many of you already have it.

If you look in your folder you will see that I have tried to encourage you to become a member of the American Vocational Education Research Association. It requires a reasonable initiation fee and dues but serves a very important function particularly since there is a substantial amount of federal funds that is set aside for vocational-technical education research. We in the State of New Jersey are quite happy to receive this several hundred thousand dollars research money so that we can make it available to you people to do the kind of job that needs to be done.

Also in your packet, you'll find Part C of the Vocational Education Amendments of 1968. Frequently we hear that people have not read this Act, and those of us in vocational-technical education and those of us even peripherally connected with vocational-technical education certainly should read the Act.

There are many implications that are just beginning to surface. When the Act first came out it was indicated by a very wise man that this was the first act that could really motivate new directions for all education. If you read very carefully you will see that it has implications for even the college bound. Look it over very carefully for definition as to the kinds of research projects that can be supported through federal funds.

We have had many past accomplishments, but we cannot rest on them. We have been involved for the last two years in a major planning system for the state. We have designed a planning system for the local education agencies. We are at present testing out and cycling out this system in several districts. We have been involved in many of the outstanding pilot projects throughout the state. To name a few: The Industrial Prep Program, the School Industry Coordinating Council, the Job-Placement Coordinators, a Special Needs Program in the area vocational-technical school, Technology for Children which as you know is an award winning program, originally funded by the Ford Foundation, and the Introduction to Vocations Programs.

In addition to all of these we have felt the need for issuing special papers on sharply focused topics. You have two or three of them in your folders. In addition to those we have others that speak to evaluation, ERIC, and strategic planning. Most of you have been the recipients of our quarterly publication "Feedback" which tries to keep you abreast of the latest in vocational-technical education research.

Another item in your packet which has been briefly mentioned, is the study that was done by Dr. Po-yen Koo. If you review that very carefully you will see that there were certain priority areas delineated in his study. Actually, this study led into discussions that are culminated in this conference.

With all our recognition and appreciation of the context of the researchers' discipline we must affirm that we have much work to do. As we do our work we must be relevant, completely aware of and focused on educators' real problems and our work should provide tangible operational payoffs. We discover that to take the trouble to keep in touch with our immediate and larger educational contexts is a professional necessity. This conference is best described as a conversation between and among vocational education researchers concerning the part they play serving the educational world.

Let the conversation be continued. American vocational education needs each of the concerns scheduled for presentation here. For example, the economics of education is a vital topic because of the spreading government interest in long-range planning and funding on a basis of relative priorities, the availability of computer technology for sophisticated planning and funding control, and the shifts in responsibility for educational support away from the local level and toward the state and federal levels.

What about our products and its consumers? Researchers have for a long time measured their own research and productivity usually in terms of publications and size of research grants, but until recently have not thought much about the consumers of their research products.

Thanks to the demand for research grants a whole new communication operation was developed. Major systems for dissemination of educational research such as ERIC, and the university microfilm system were provided. Review and synthesis papers concerning specific areas of vocational education research have been widely available. Brief, tough-minded targetive papers are becoming common. Over 82,000 microforms of educational research are now available. Symbolic of the growing importance of our consumers and of our increasing responsibility for consumer oriented products of research is the display just outside the door of this auditorium. It is an integral part of this conference, because it shows the latest technology working to communicate needed research to both key decision makers and local educational practitioners.

Hopefully, every person here will not only be challenged by our speakers but also take time to visit that display in order to be able to use and to explain to others what is meant by the New Jersey Career Education Research Utilization System. We have selected our speakers very carefully and expect their presentations to provide much food for thought and provocative discussion. Ladies and Gentlemen, we hope that this is but a first annual meeting of vocational education researchers and their colleagues in the State of New Jersey. We feel that its success will be a tribute to your commitment to vocational-technical education research.

Dr. Koo's study was based on a small sample. We felt that there was a great need to have input from many additional persons who are involved in administration in vocational-technical education, in administration in general education, and in teacher education, etc. Review it very carefully, you will see some of the priorities that this small sampling brought to the surface so that it can give you an idea as to some of the things you might want to discuss later after we hear from our very competent speakers.

In addition, we have been involved in making available to people resources in terms of microfiche, pamphlets, books and other items so that they would have at their disposal and close by, the material from which to do research and gather information. We have accomplished this over a period of years. I pay tribute to Mr. Edwin York and his office for setting up the excellent resource center at Old

Camp Kilmer Building 871, in Edison.

You have a pamphlet, a very colorful brochure, that indicates what the purpose of that resource center is. Those of you who have visited the center, I'm sure have come away with a feeling that here, in one place, we have located a number of things that will help us in our research effort.

In addition to the Resource Center at Edison – the grandfather of that is the small facility we had at the Division of Vocational Education in Trenton – Mr. York and his staff also have a major responsibility for six other Career Resource Centers in the following districts: Asbury Park, Camden, Hackensack, New Brunswick, Rahway and South Brunswick.

Outside you were treated to a demonstration of how fast a microfiche can be duplicated for you. We have this capability. Avail yourselves of the Resource Center.

The specific objectives of this conference are listed in your program. I will not go into those, but I will say this, very formally, as an introduction to the work of this conference. I want to focus your attention on three basic realities: (1) that we work within a specific context, (2) that we are engaged in key conversations and (3) that we have a product and consumers for that product.

Although every human activity has context, we researchers in vocational education have both an immediate and a long-range context of crucial importance to our effective function. We cannot afford to ignore our immediate context. In our work of expanding basic knowledge about the educational process and of improving vocational-technical education programs, we must appreciate the necessity of research studies, demonstration projects, and dissemination activities. Research studies – I have already mentioned some of the ones we have funded and assisted people with. Demonstration projects show how bits and pieces of research fit together to form major innovative programs. And dissemination activities are necessary to communicate development and persuade educators. Many times, as we well know, we have to persuade educators to adopt alternatives to existing practices. All of these activities have their unique contributions.

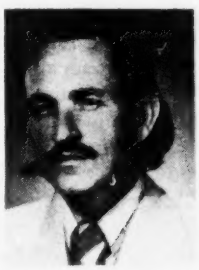
We vocational education researchers must feel a kinship to the broad movements within American education, such as the individualization and humanization of education, career education, and continuing education which are receiving tremendous emphasis today. Research dimensions in career education must be firmed up because the Office of Education is deeply committed to this approach to education both in manpower and finances. Because of the heavy borrowing from many disciplines in career education and because the concept is largely untested, it will be many years before any definitive model for replication will be available, but the water is ideal for swimming.

* * * * *

Career Education is not a single specific program. It is more usefully thought of as a goal – and one that we can pursue through many methods. What we need today is a nationwide search for such methods – a search which involves every area of education and every level of government. To help spark this venture, I will propose an intensified Federal effort to develop model programs which apply and test the best ideas in this field. *President Richard M. Nixon*

THE REDIRECTION OF EDUCATIONAL RESEARCH IN VOCATIONAL-TECHNICAL EDUCATION

The most common complaint about educational research is simply that it is trivial. One of the main causes of triviality is the enormous complexity of the fundamental phenomena of interest. Additionally, the conceptual structures necessary for an adequate view of the phenomena of interest are multiple and conflicting. Finally, and to me of most importance, the current view of what constitutes an adequate approach to research in education is basically mistaken. We *are* dealing with a most complex subject. In vocational-technical education (VTE for short) we are dealing with conflicting and competing views of three major topics of interest. We must somehow try to be clear about work, education, and science. There is enough here for a book. Each of these topics has alternative ideologies. By ideology I mean a mixture of facts, concepts, and beliefs used to direct human action. The ultimate aim is to find three ideologies that come together synergistically to promote a coherence of view rather than a cacaphony of voices.



Dr. D. Bob Gowin
Professor of Educational Philosophy
Cornell University

". . . avoid the relentless monotony of trivial research."

There is a viciously synergistic view that I wish to put down. Whether the virtuous view can be constructed is an open question. At this stage facts will not help us because the problem is foremost a conceptual and normative one.

The ideology of work is composed of a set of related concepts having to do with distinctions between work, the worker, the work product, and the universe or so-called world of work. It also involves distinctions between work and labor, work and jobs, work and play.

The ideology of education includes elements of a rule-governed social setting, a clear concept of education, a humane process for transforming the uneducated into better educated individuals, including the interactions of teachers and learners, and bodies of knowledge as subject matter involved in these interactions.

The ideology of science, or as we see it as educational research, is also composed of a large set of related facts, concepts, and beliefs. This set refers to such familiar topics as the conceptions which guide inquiry, the methods and techniques used to answer the telling and technical questions, the results or products of research effort, the

investigator and his community of scholars, the intrinsic and instrumental values of the field, and finally the phenomena the field deals with and the occasions which give rise to the quest for knowledge.

The redirection of educational research in VTE requires us to combine these sets of complex ideas. It is beyond my abilities to do so here and now – I can only give some bits of analysis and propose a sense of new direction. First some examples of mistakes.

A Mistake in Research Ideology

In a recent article in the *Review of Educational Research*, Professor Kraft notes the growing interdependence between vocational training and higher technical education and industry. And he is alarmed that technological developments have not become an area of primary research concern. He notes that there is an unfortunate shortage of relevant empirical material. "Thus, recent research into education and occupation had two aims: to stress data collection and, as a consequence of the empirical aspects of this research, to formulate new conceptual tools." (p. 502)

Richard H. P. Kraft, "Manpower Planning and its Role in the Age of Automation," *Review of Educational Research*, Vol. 40, No. 4, October, 1970, pp. 495-509.

The recommendation to collect data seems to assume a direct empiricist procedure about data being somehow out there to collect, that the data are free of conceptual structuring in the first part and generate new conceptual tools in the after part. But just to decide what is to count as data requires a decision and therefore a standard for making the decision; since the standard cannot be merely whimsical (serendipity is not a standard however fortunate its workings may be), it must be rational and therefore formulatable as a concept or set of concepts. My objection is to this frequently recommended procedure to collect data and then develop concepts. I suspect this procedure is responsible for much of the triviality of research.

Professor J. J. Schwab argues that it is the conceptual system which initiates and guides the inquiry. The first search should be for substantive conceptual structures which permit us to ask telling questions of the phenomena we are interested in.

J. J. Schwab, "The Structure of the Disciplines: Meanings and Significances," *The Structure of Knowledge and the Curriculum*, G. W. Ford and L. Pugno, editors (Chicago: Rand McNally and Company, 1964), p. 25.

A Mistake in Educational Ideology

There is a clear male sex bias in VTE. For example, in my state a recent Board of Education catalog, *The Public High Schools, New York City, 1970-71*, lists 17 segregated high schools for either "Boys only" or "Girls only." Of these 17, 12 are for male students and only 5 are for females. Women who are required to take cooking in junior high school are not allowed to enter Food and Maritime Trades High School, the only school in the city where they may study to be chefs. *The Public High Schools* lists 77 major technical courses open to males, while 36 are listed for females. Most of the courses on the female students' list, such as typing, stenography, and cosmetology, are also on the list for male students, but most of the subjects on the male list are not on the female list, such as architectural drafting, radio and TV mechanics, jewelry making and, as mentioned earlier, commercial cooking and catering.

Claire Paisner Doubrovsky, compiler, "What We Have Found," *Report on Sex Bias in the Public Schools*, New York: New York City Chapter of the National Organization for women, Education Committee, 1971, pp. 3 and 4.

There is no educational justification that I know of to support the continued discrimination against females in these schools, and the fundamental value of equality of educational opportunity certainly justifies treating males and females equally as persons in need of an education.

A Mistake in the Ideology of Work

The standard line in many women's magazines about housework has been for a long time that the woman should be creative about her chores. She should dust and do dishes and diapers with an imaginative flourish. The ideology of work, however, calls for a conceptual distinction between labor and work. Labor is something done only to be done again; we eat and do the dishes only to have to eat and do dishes again. These activities are necessary and also futile. Professor T. F. Green writes:

> Whatever is produced by labor is produced to be consumed, not to be put to use. Labor is endless; it sustains life but it does not produce any durable product. But the concept of work is of an activity that *in principle* is aimed at the production of some persisting object or product. (p. 21)

T. F. Green, *Work, Leisure and the American Schools*, New York: Random House, 1968.

Further, Green writes, "Labor is necessary and without end precisely because consumption is unavoidable and endless. Work, however, produces artifacts to be used, not used up." (p. 23) Work is thus a fundamental value for civilization; it is an activity which creates enduring order and defies chaos and entrophy. The mistake in the ideology of work is to confuse work and labor. Many jobs are so set up as to constitute merely labor; the worker is told to be happy in it because work has inherent worth. But this is a delusion no matter how benevolent it is thought to be because it ascribes to necessary but futile labor the values of work. The meaninglessness of many jobs is directly a consequence of that brand of so-called "scientific management" which subdivides tasks so that one act is isolated and independent of all the other acts of production which lead up to the end product. A task performed within the context of production is humanly valuable and has human meaning only if it is related to the production of some object produced for use. This mistake in the ideology of work easily slips into the ideology of education, especially vocational education.

Vocational guidance often propagates a line which tells pupils that any socially useful work is noble, dignified. But this advice blinds us to the fact that it is the worker, not the job, who has the dignity. Pupils are told that the prestige of the occupation does not matter as much as how well one performs his work. The unfortunate stress in this approach is to find the few who should be encouraged to prepare for the most prestigeful positions instead of, as Professor Thomas writes, "on finding ways of distributing the characteristics of prestigeful occupations more widely among all occupations." (p. 10)

L. G. Thomas, *The Occupational Structure and Education*, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1956.

Ideological Mistakes Combine

There are rewards in both the educational and occupational system. Sometimes these rewards are genuine, but sometimes they are only tokens to be manipulated. Schooling, as opposed to education, can become an exceptionally adept process of preparing young people to beat the system. If rewards of grades and prestige go to those who can endure meaninglessness, persist at tasks for which they have not been required to select either means or ends, and to find real zest for life and learning *outside* of the perceived central purpose of the institution, if then these conditions hold in both school and jobs, then we have succeeded to be highly efficient in devising an apt vocational or career education system. And if there is no need to do research where there is no problem requiring solution, then there is no need to do research in VTE. The final ironic consequence of these viciously combined ideologies has a telling effect on the research worker and his product. What research *is* done is ignored; it has little effect on improving educational policy and practice. No one really cares about his product just so long as it seems to the public eye that he is producing something. The only worry over significance is at the .05 level.

Further Mistakes in the Ideology of Research

In a recent review and synthesis of research on the economics of vocational education, J. Robert Warmbrod comments on the usefulness of cost-benefit analysis as an evaluative technique in VTE. This technique is limited by its requirement that "benefits as well as costs must be quantitated in monetary terms." (p. 39)

J. Robert Warmbrod, consultant, *Review and Synthesis of Research on the Economics of Vocational-Technical Education*, The Center for Vocational and Technical Education, The Ohio State University, November, 1968.

Warmbrod cites Speigelman (1967) as recommending "Benefits that cannot be expressed in monetary terms cannot be included in the analysis," and a paragraph later cites Kaufman *et al* (1967) to the point that it is virtually impossible to quantify individual and social costs. (Warmbrod, p. 11)

How can one take the research requirement of cost-benefit analysis seriously? Benefits which cannot be quantified cannot be analyzed; but most educationally important events are saturated with a combination of normative, analytic, empirical and even metaphysical propositions which will never be reduced to quantities. We see committed the fallacy of changing the subject; we start out to do educational research and end up studying something else. If the concept of research calls for the elimination of significant features of the educational phenomena of interest, then we jolly well better change our concepts of research to fit our educational interests and not the other way around. This one example should not be expected to carry the conviction that this mistake is a fundamental one. Let me therefore extend this part of the analysis quite a bit.

The Fundamental Mistake

The main recommendation of this paper is to change the familiar pattern. The researcher should first try to be clear about the concepts, methods, and procedures of educational practice so as to be able to select phenomena to study that pass as educational phenomena and then adapt, invent or utilize relevant research procedures. The reason for this recommendation is simply that many events which are educational never get studied now, and many events which educational researchers concern themselves with now have little or nothing to do with education. Further, following this recommendation would force researchers to argue first about what is and is not educational, rather than discussing only what is and is not scientific. This kind of discussion would lead to a thorough analysis of educational theories, concepts and practices.

RESEARCH PRIORITIES IN VOCATIONAL-TECHNICAL EDUCATION

Dr. John K. Coster
Director of the Center for
Occupational Education
North Carolina State University

". . . system change to accommodate or to attain its goal."

The question of priorities for research is one that personally I have struggled with for a long time along with a number of priorities such as the priorities for Educational Personnel Development, priorities for the Center of Occupational Education and even the priorities for allocating resources by the State Divisions of Vocational Education. These are a class of priorities of which research priorities are part. At the end of my presentation, I will go out on a limb and indicate to you what some of my personal notions of what priorities involve.

But I am more concerned here in trying to examine the priority determination process and what is involved in this particular process. Let me hedge my bets somewhat at the start by saying that I am not going to talk about basic research today. I feel that it probably falls without purview of my intended discussion.

The pursuit of knowledge for the sake of knowledge, information for the sake of information is not within my immediate area of concern. I'm really concerned about how you change systems, assuming that you know and find out how you want systems changed.

I would start out with a definition of priorities maybe somewhat inadequate and I would call it a qualitative or quantitative ranking or ordering, based on the application of the planning decision making process which governs the allocation of resources.

There are several key words here: One of them is resources. This point was mentioned earlier by Dr. Margules when he said that we have some money and we want to spend it in the best way possible! How are these resources allocated? Basically, it is an application of a decision making process. Research priority would follow as a qualitative or quantitative ranking based on the

application of the planning decision making process to formalize inquiry. I have used the word formalized inquiry in defining research in the term of research because I want to get away from the notion that research is bounded by different types of research. I have tried to reject that notion of classifying research in those categories and indicated that research is a process of scientific inquiry and observation.

Dr. Gowin would have some things, I'm sure, to say about that. At any rate, let's define it on that basis.

Research priorities may be divided into two classes. One class of priorities would be the individual priorities and that priority, as far as the individual is concerned, relates to the goals of the individual. Simply stated, "what is it that I as a researcher would be able to accomplish within my life span?" What contribution should I make? Where am I to fit in the total structure? Though to certain extent you may not even think about the total structure. Applying my previous definition in terms of an allocation of resources this simply says that the individual himself has time and energy — has resources to allocate to research. He is concerned with determining where he may be able to make his impact in the research field, or he may be concerned with what kind of satisfaction he gets by contributing to the knowledge of resources.

This is a kind of individual priority — and I think all of us have been involved with determining individual priorities. The notion that you assign part of your time to the research effort and you can determine what kind of goals you want to accomplish as a result of the allocation of your own resources.

The second class of priorities deals with the institutional priorities. That is, the goals of the institution. An appropriate example, in this case, would be the New Jersey State Division of Vocational Education. These two priorities need not be compatible. This, in my judgment, presents one of the major problems with all educational research and development activities including, of course, vocational education research and development activities — the priorities of the individual not being congruent with the priorities of the institution.

Now I want to spotlight institutional priorities and dismiss individual priorities for the moment. I'm going to argue for the sake of argument. Ideally both these priorities would be congruent. If they aren't, then the individual researcher may have to go some place else besides the institution to get support for his time and effort.

The institutional priorities for research are determined by analysis. This is, analysis of the state of the system. To that extent, I think I would take some issue with Dr. Margules when he said that he wants all of you to be concerned about submitting a research project. That is fine, insofar as this project contributes to certain kinds of needs that may be determined by the analysis of the system. It is not if the individual needs do not coincide with institutional needs unless the institution, that is, the State Department of Education, says we will commit part of our resources to supporting basic research or research that may have a promising effect somewhere down the line. Obviously we need both kinds of research but the dual approach isn't the decision made very often. What I am concerned about, as I indicated to you earlier, is this whole notion of system change to accommodate or to attain its goals. I am concerned about the extent to which the research component may be contributing to the system change.

Basically, analysis of procedure produces the discrepancies between the desired state of the system and the actual state. The knowledge of the discrepancy between the desired state and the actual state produces a problem. Basically, then, I define problem in somewhat the same way that Ofner defines problem as a discrepancy between the desired state and the actual state. If we can define these discrepancies then in terms of how the system is performing this may give us initial cut at the whole question of determining priorities. If analysis is continued to the "nth" degree then the process analysis should produce information that delineates an array of problems which may contribute to discrepancies between goals and outcomes.

What I am talking about here is that the institution or the agency can define its goals, and once it has defined its goals it can determine what its outcome is by the process of evaluation and analysis. On this basis, the discrepancies can be used as a basis of priority. Now this is not a one-man job. This may involve a number of people. But what I am concerned about is how resources are allocated to research. Is resource allocation based upon the priorities in terms of related facts through the discrepancy between what the goals are and what the outcomes of the system may be?

We can assign priorities based on the ordering of problems in terms of the resolution of problems which are most likely to result in attainment of the goals. If we know what the problems are we can try to order them and say which of these problems are the most significant when viewed in terms of the knowledge that is needed to produce the desirable changes. Or we can order the problems based on the utility of the solution evaluated against the probability of successfully resolving the problem. Let me explain that. If you take any project, any problem that results in a research project, you can assign essentially two values to this particular project. One is the utility of that project, in terms of knowledge or information the project is likely to produce at its completion. The second is the probability of successfully completing the project given a certain amount of dollar constraints and given a number of other factors — needs to be taken into consideration. One factor is a state of a current knowledge. Another is the state of the knowledge as far as the researcher is concerned.

There are a number of factors that come into consideration with regard to making a decision as to the ordering of problems in terms of the utility and the probability of success. The high utility projects are usually the high risk projects. Here is where the decision-maker has to make a judgment in terms of the allocation of resources priority. In other words is he willing to gamble upon a project that has high utility but a low probability of success for completion? You can hedge your bets somewhat by knowing the state of the art and the competency of the researcher. This assumes that he has a history of research in a particular area of focus so hedging is possible, but somewhere along the line I think any organization, including state agencies, may want to take some risk upon research that is high in priority because of possible rewards involved.

Let me speak now to another topic that deals with the whole notion of research priorities. That is the notion of research programs. What I'm going to say here is that the research programs may be formulated based on the massive attacks on interrelated problems. We have probably erred too strongly, and I think this is true in my own case, in terms of single research cuts. This may be where part of the trivia comes in. We have not been concerned sufficiently with what might be considered a research program based on massive attacks on problems. I won't say this is true in New Jersey because I don't know what the situation is in New Jersey, but when I looked over the list of projects supported by a number of states under "Part C of the Acts," I had some difficulty seeing where the massive attack comes.

As a matter of fact, I am at the present time, on the Board of Governors of the Florida Educational Research and Development Program and we are having some difficulty determining how we can influence the direction of education through the research and development program by creating a massive attack on a research program that is interrelated. For example, the relationship between the cost of education and the attainment of goals and objectives of education is an extremely difficult area to deal with.

In bringing about the notion of the priorities, some consideration should be given to the massive attack as far as the total program is concerned. Establishing priorities involves judgment; precision may be increased by applying quantitative methods but usually the quantitative method involves assigning weights to problems. The weights, however, may be derived from formalized methods such as the Delphi Technique. When we talk about the priorities of vocational-technical research there is a judgmental process assigned to the question of priorities. We may have to quantify this. In fact we had one project conducted in the Center of Occupational Education and tried to determine one way we could allocate our resources on the basis of priorities by some kind of formula. Struggle as we did to come up with solutions, we finally decided that somewhere along the line we had to apply judgment of weights to the amount of resources going into the problem. This involved a decision-making process and this decision process may be helped by such as the Delphi Technique which is a way of trying to get some degree of consensus over time with regard to programs.

I'm not sure we can get very far with the brainstorming for research ideas. I've been in that exercise a number of times and I have found it to be extremely futile. It may help some people to identify what other people think the problems are, but what we are concerned about is system change assuming that change is good, or change is needed, or change is desirable.

I want to look at two possible goals of career education and then look at some of the needs in order to resolve those goals so that we may be able to get on that together later and talk about that. Let me just go into some research priorities as I see the needs developing. You may argue whether these are priorities or not, but I would say that the first priority we would have with regards to research and development is the development of an analytical capability to assess a discrepancy between the desired and actual states. This analysis should reduce the problems. On that basis, then, we would get some notion of where we stand now and where are we going in the vocational education program. I think this development of the analytical capability is one of the most crucial needs in the whole research area. This represents a fundamental change in my whole career which I was somewhat concerned about.

At one time in my career I though most of the vocational education research problems might be decided by the application of Fisherian Statistics. I spent quite a bit of time – in fact I tried to get somebody to introduce me by saying that the event in my life that most qualifies me as a researcher, in my judgment, is that I spent five weeks in 1956 on my honeymoon at the University of Colorado – studying advanced educational statistics in research methodology. I think that would indicate something about the allocation of my own resources and time when I decided I wanted to go into research.

The route to research at that time was Fisherian's Statistics. I do not want to deprecate the importance of Fisherian's Statistics. It has made a monumental contribution to the society at large. I am saying that I have almost come to the conclusion that we may need different adults with different capabilities and one of them is the ability to be able to analyze the state of the art in terms of discrepancies.

The second priority may sound peculiar. The second priority in research is to develop strategies in communications to relate problems to researchers and the research findings back to the decision maker or manager. I think this strategy should have extremely high research priority. This is not telling you what to research. It is simply saying that unless these strategies are developed – and we don't have final solutions yet – I believe communications between the researcher and the decision maker will continue to provide obstructions. This concern believes that research funds should be used for institutional goals. I am not talking about the individual goals here. The individual, if he wants to, can research as long as he wants to, and he can pile up his research on the shelf. If I was the decision maker he wouldn't be using my money for that purpose. I hope I can get that point across. Unless I say that we are going to decide to allocate part of our resources for this individual interest activity, it must take a back seat. Resource limitations mandate this guideline.

Our strategies for communication have not been very effective. Consequently, we do not find our research being utilized. I received a questionnaire to fill out from an EPD fellow at Oklahoma State University in which he wanted my opinion about a research utilization specialist. My first reaction was to write a letter and tell him that I didn't believe in it, but I decided I didn't want to be mean to him. It's interesting! We talk about people like research utilization specialists. The real problem is the problem of communications – our inability in being able to communicate what the needs are back to the decision maker. So that in the whole process through setting policy and establishing goals we can determine where research provides information and knowledge that will feed into this entire process.

Now the third priority is one of thrusting problems into research programs. The fourth is determining the state of the art with regard to problem solutions. Let me illustrate this point. I think this is crucial. I hope the agriculture men won't be offended if I use an illustration from the field of

agriculture education. In about 1958, the Directors of Land Grant Institutions published a paper in which they stated, somewhat unequivocally, that prospective vocational students in agriculture would be advised not to take vocational agriculture in high school but to take math and science instead. This really upset the agriculture educators considerably. A series of research studies was developed designed to demonstrate that students who had vocational agriculture in high school fare less well than students who had not had vocational agriculture in high school assuming certain kinds of controls and covariance could be applied. The answer came out of the first institution was there was no difference. I forget where it came from. If it came from Illinois, Indiana said "No! That's not good enough for me." So a study was done in Indiana and the same answers were obtained. When the whole process was through I believe 22 studies had been conducted. All found the same answer essentially. Different methodologies were employed, but all produced the same answer.

I would contend that nobody produced any more knowledge on this subject than was produced by Thorndike in 1923 in terms of educational research. But it had to be done. It's kind of an interesting commentary in terms of determining what the state of the art is and I suppose it is desirable that people do not accept other people's findings. The 21 people who conducted doctoral dissertations on the subject would have been sunk if it hadn't been for the fact that there is a notion that if a study was done in Illinois, it wouldn't apply to Indiana.

That feeling is amply demonstrated by the hog detergents studies. About 1955, the animal nutritionists decided they would experiment on applying detergents to feed additives. The reasoning, I understand, is somewhat interesting. They said in the pioneer days, the farmers used to see dishwater to slop hogs with, and the hogs didn't have as many worms as they had later on. So what was in the dishwater that might have contributed to some well being as far as hogs are concerned? The researchers decided to add a detergent as a feed additive. Hogs are hogs! But for a period of time there was a flurry of activity of adding detergents to hogs. Adding detergent to the hogfeed in Indiana, Iowa, Illinois and a number of other states at agriculture experiment stations, they found out it wasn't doing any good in separate studies. But the interesting thing is, there was no attempt to find out what Indiana had done first. All of these experiment stations were running the same routes, probably with minor variations on the theme. I think that we have not paid enough attention to the state of the art with regards to problem solution. Research then became purposeless really except as an end in itself.

And then, finally priority five, is to assign priorities to programs based on the criticality of the program. Let me then go into what I consider to be about six or seven priorities for research. These are my own personal ones and I have not really applied any of my decision strategies to this. Priority number one is evaluation. I think it's been our problem all the way up the line. Basically the problem is not so much how to conduct the evaluation, although this is important, but what kinds of information will be useful to the decision maker in deciding on the allocation of resources to vocational education.

There are a number of variations on the evaluation theme. I'm sure Dr. Kaufman is going to talk later on the "benefits" side of evaluation. We may be "hung," Dr. Kaufman, on that thing if we go the career education route, because we may be concerned with social values as trying to reduce welfare costs or trying to upgrade the general level of skills of all people in the society. There may be social costs which have no accountability in terms of cost-benefit. When we think about these types of evaluation, we have a problem beyond what kinds of information will be useful in terms of making decisions, as far as Congress or state boards of education, local boards of education and other people are concerned.

I think we're moving fast on evaluation. Certainly we're much better than we were some time ago. I don't think we have solved all of the problems yet. Evaluation still ranks in my book as one of the most serious problems and one of the most difficult. That's probably one of the reasons why so many of us have shied away from it. I've done more talking on the subject than I have done acting and that's not good.

Priority number two is what I'm going to call (for want of a better term) "acting on minorities". I have classified minorities as Dewey did. Dewey said some things about career education at the turn of the century. They are still relatively significant. The category includes the blacks, the disadvantaged, rural and urban whites, and it includes the women. Unfortunately, I don't think women have really been quite as concerned about some of the issues that I would like them to be concerned with. I think one of the things we should think about is how we're going to act on the minorities in terms of getting them into the mainstream of the society and the whole notion that each person will have a work role and each person will have a homemaking role. There are a number of issues involved in this particular aspect, but there is also the cultural backdrop against which these people play. I see that this whole question is one that we have not been able to solve in terms of how to change the cultural milieu in which many of these problems are created. It's a very serious problem!

The third priority, in my estimation, deals with the use of time. I think we ought to treat every kid in first, second and third grades as though his time was worth something. His time is worth something! It has economic value. We can do it in the college because we assume that while the student is there he is foregoing earnings. What would happen if we tried to treat the primary graders in that respect? I think this is important! How can we cut down the amount of time required to learn certain pieces of information? I think this whole question of use of time is an extremely important priority in research.

The fourth priority is the decision making process and how it is accomplished. I think we need additional information. How do people make decisions? This is really the key to career education. How do people make decisions?

The fifth priority is how do other people process information? This is another component in career education. How do they process information about themselves? How do they process information about the world of work — occupational structure? How do they process information about society and how do they use that information in the decision making process? The knowledge of how people process information is extremely important. How do they arrive at decisions? I don't think we have all the information about that.

The sixth priority I'm going to label "articulation". I think articulation is one of the serious problems in any program concerned with a womb to tomb type of education. How do these programs articulate? We're doing evaluation of exemplary programs in North Carolina and I've been somewhat concerned about the articulation process. What we're dealing with is three subsystems in the Wade County school system and there is no articulation between the systems. We haven't worked this problem out to any great extent. I don't, at this point, know how it's going to be worked out.

These then are six priorities, but for the record I will list them as six of the highest priorities. I hasten to point out that I do not practice what I preach. I did not apply all of the criteria in order to arrive at these priorities. I felt somewhat obligated to indicate to your what some of the priorities are as I see it throughout the nation. What I'm personally most concerned about is the decision making process by which resources, individuals and institutional resources are committed to the analytical procedure that each goes through and specifically saying that evalution, in my book, is the number one priority.

RESEARCH IN VOCATIONAL-TECHNICAL EDUCATION: ECONOMIC IMPLICATIONS

When an economist enters the arena of educators for the purpose of discussing education the first reaction is that he will begin to discuss the subject in the same way that he usually discusses automobile production. He is immediately ignored because "everyone knows there is a big difference between education and automobile production." How can one discuss the production of education in the same manner as the production of an automobile? After all, one involves a human being, the other a physical object. The economist is looked upon as a non-compassionate, materialistic, cold-blooded, analytical animal who lacks humanity.

The fact is that the contrary is true. It should be recognized that all societies, including our affluent society, does not have the resources to meet all of the needs of its people. Given the fact that our needs far exceed our resources, the decision maker is confronted with the problem of allocating scarce (by which is meant limited) resources in such a manner as to maximize society's goals. Once this proposition is accepted decision makers have no alternative but to turn to the economist and obtain his aid — in the forms of a "way of thinking" or the use of the tools of economic analysis. And the choices — which are economic-type choices — confronting the educator are: (1) what types of education will be provided — basic, post-secondary, higher, graduate? (2) how much of these types should be made available? (3) within each type what forms should be provided, e.g., occupational or academic, post-secondary technical or baccalaureate, undergraduate or graduate? (4) what educational processes should be employed, e.g., teaching or independent learning, lecture or educational technology? (5) who is to receive these types of education? (6) how will education be financed? (7) what are the costs involved? (8) do the results justify the costs?

If education is to fulfill its obligations to the youth educators must begin to answer the questions listed above. And I would insist that by answering these questions with the assistance of economic analysis education will receive the support of society. But, in addition, our youth will be served and that is, in my judgement, very compassionate and human.

Is there anything wrong with the educational process? Let me explore this question.

During the past two years we have heard a good deal about civilian killings in South Vietnam by members of the armed services. What are the factors which led a large number of soldiers to perpetrate such crimes with what is apparently a high degree of equanimity? It is too easy to place the burden of responsibility on the educational system, since the youth of today are products of a host of factors, each of which contributes to their character. Yet, it is wrong to conclude that education might not be able to play some role in the process. If each group in society concluded that its contribution is only a small part of the whole and thereby waives responsibility, the totality of each of these decisions adds up to nothing.

In September 1969 the Community Relations Service of the Department of Justice issued a report on "student unrest." It was found that 75 percent of the high schools experienced some form of student unrest during the school year 1968-1969 and that the issues were "fundamentally three: (1) institutional racism; (2) institutional irrelevancy; and (3) a continous failure of communication between administrators and student protestors." In general, it was found that "a few teachers and administrators felt that most demands made by students were legitimate, and in the survey acknowledged failure on the part of the school to respond adequately to students and community needs." It was also found that "teachers . . . for the most part felt threatened by student unrest" and "by a ratio of 2 to 1, teachers were hostile toward protesting students." Finally, "the survey indicates that only one-fourth of the students' demands are being met. The high school students have as their greatest support the parents; the least help comes from school boards."

If institutional racism is common in our schools, is it any wonder that soldiers, who are products of these schools, refer to Vietnamese as "gooks?" If many students consider the curriculum as irrelevant (as the survey suggests) and the response of school boards, school administrators, and teachers is one of hostility, what type of learning — substantive or of character — can take place in the school system?

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Professor of Economics and Director
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". . . every means to open up new vistas for youth."

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The main point of these comments is that the youth of today are products of decisions made 20 to 30 years ago, in terms of curriculum, teacher training, the training of school administrators, etc. If we want to turn out a better product in the future we require a lead of 20 to 30 years. What is done in the 1970's as *inputs* into the educational system will yield the desirable *outputs* of the year 2000.

The former U.S. Commissioner of Education, James E. Allen, once stated that "public education as it now functions in much of our country no longer has the full confidence of the people in its ability to satisfy their needs and aspirations."[1] He recognizes that some of the criticism may not be justified and, even if justified, the factors behind the lack of confidence are beyond the *direct* control of the educational system, such factors including "poverty, ghetto patterns, discrimination, general economic conditions, etc."[2] However, in his judgement, educators do have control over how they react to this dissatisfaction. Commissioner Allen suggested that "we must be willing to abandon old arguments which too often are based on beliefs and emotions with little basis in fact; to think of education more broadly than in terms of schools and our profession; to be prepared to experiment with drastically different concepts and practices; to introduce scientific discipline into planning, evaluation and management of educational programs."[3] Finally, he establishes three broad goals: the improvement of American education and increasingly its relevance; the solution of the problem of the education of the disadvantaged; and the increase in, and redistribution of, the resources allocated to education.

Why should we be so concerned with the resource allocation question?

Society today is confronted with growing demands for governmental expenditures in such areas as education, welfare, poverty, medical care, etc.[4] The gap between these total demands and the resources available to the various governmental units is ever-widening. As these various programs compete for the so-called "limited buck," it becomes essential to determine priorities not only between education and other programs but also among the various competing groups within education. The competition within education may be among elementary, secondary, and post-secondary (all types) levels. And, within each of these groupings, one would find competition between academic and vocational education at the secondary level, between undergraduate and graduate education at the post-secondary level, and between two-year and four-year programs at the undergraduate level.

Given this competition for limited resources, it is clear that priorities must be established. The priorities can be established only on the basis of comparing the outputs (or objectives or benefits) of various activities with the inputs (costs) of these activities. No longer can the educator lay claim for more resources simply on the grounds that education is "good" and more education is "better." The same argument could be made for other social programs. Nor can vocational educators continue to ask for "more" at the expense of academic educators, or vice versa, without relating these extra resources to the achievement of specified goals.

The fact is that there has been a mis-allocation of educational resources.

When the allocations of resources in the intermediate and secondary levels of education are examined, one finds an over-emphasis on academic education (college preparatory) and an under-emphasis on occupational training. It has been asserted frequently that for grades 7 through 12 approximately 80 per cent of the schools' resources are devoted to academic or a generally watered-down curriculum, despite the fact that 80 per cent of these youngsters will eventually enter the world of work, either as dropouts or as graduates. Regardless of the precise percentages, the allocation of resources is perverse, has been inefficiently employed, and badly allocated.

But, the question can be asked, what are the particular goods of the educational system? How do we know whether or not they have been achieved? Can achievement of goals be quantified? Can we relate costs to the particular programs designed to achieve the goals? These are questions which educators must answer.

Generally, an educational goal has been expressed in terms of "improving the quality of education." This is too general a statement and it would be wise to state the objective in more specific terms. Is the objective to have more students accepted into college, or to have the students score higher on standardized achievement tests, or to have more students obtain employment at higher starting salaries, or to have the school receive a higher rating by its accrediting agency?

A statement of the specific objectives in specific terms makes it easier to list and to evaluate the available alternatives. Let us assume that the last alternative – a higher rating – is the goal. There are many ways to achieve a higher rating. One way is to improve the physical facilities of the school. This could be done through refurbishing existing facilities or constructing new facilities. A second way is to improve the quality of the teaching staff. This could be accomplished by in-service training, tuition refund for courses, or salary incentives. A third way is to hire more teachers who could be used either to reduce class size or, by keeping class size the same, to give the teachers more time for preparation. A fourth way is to hire teaching assistants to perform routine tasks. A fifth way is to hire coordinators who would rearrange the instructional process and assign teachers to lectures, practicum, group discussion, tutoring, etc.

As indicated, to achieve the goal of higher accreditations five general alternatives are possible and are considered in an explicit manner. Too often the decisions are made without the alternatives even being suggested.

An essential ingredient of an educational system in a democratic society is providing the youth with equal educational and social opportunities. To avail themselves of such opportunities youth must be served in a manner which permits exploration and choice, with the promise that any choice does not foreclose future options.

It is, indeed, unfortunate that probably the single, most important factor influencing the direction of a youngster's life is his family environment, a factor over which he has no control. Thus, any youngster entering the school system with disadvantages which affect his learning abilities is immediately disadvantaged in a relative sense. The equal treatment of youth at this stage of his growth, in the form of equal educational expenditures, would still produce

unequal results. It would appear reasonable that any attempt to provide equal educational and social opportunities would require *unequal* expenditures for those youngsters entering school from relatively poorer environments. Such unequal expenditures might mean greater *expenditures* for this group.

Concomitant with such resource re-allocation is the necessity that there be a multiplicity of choices and, when a choice is made, that the student not be foreclosed from changing his decision. If, as sociologists and psychologists assert, the future of youngsters is heavily predetermined by family environment it would appear that the schools should utilize every means to open up new vistas for youth. That is, it is essential that the educational system provide, through its curriculum and guidance activities, the means by which the students can off-set these pre-determined factors which influence their decisions. Therefore, significant changes in the educational process, that is the curriculum, are required.

The curriculum must be radically revised – in all areas – to accept the concept that youngsters have the ability to learn and that they do not need to be "taught." Learning should be based on experiences which are relevant to *them* and not to the teachers. The role of the teacher is to provide the conditions and materials for learning. The student seeks out problems and attempts to solve them on his own initiative.

In this approach education is no longer a 2 x 4 x 6 matrix system – the two covers of a textbook, the four walls of a classroom, and the six class periods in a day. Under this matrix the youngster is fitted into a tight, conforming mold – a school. What is required is a system which adapts itself to the needs, interests, and aspirations of youth.

Economic Concepts Applicable to Education

The discipline of economics has acquired over the years a large number of tools of analysis, usually applicable to business firms, but equally applicable to education. These concepts are, in effect, part of a tool box which assists the economist in analyzing understanding economic phenomena. I would like to explain, at this point, some of these concepts and illustrate how they can be applied to the field of education.

Probably the most common concept utilized is that of the "production function" which "may be conceptualized as a set of relations among possible inputs and a corresponding set of outputs for a firm or an industry."[5]

With respect to the private economy there are many problems in applying this concept to firms and industries. With respect to education, its application is even more difficult. As one writer put it, "the outputs of education are complex, interrelated, and hard to specify."[6] Nor are the inputs – costs of resources – easy to come by. But the fact remains that educators should still be required to specify the objectives of their programs and make every effort to achieve these objectives most efficiently.

One of the most serious obstacles to the specification of objectives is the absence of "an established theory of learning."[7] What *are* we trying to achieve by education in general, or by vocational or occupational education in particular? Are the pre-school years the effective factors influencing the educational process? If so, this raises significant questions, particularly in terms of resource allocation. For example, do we spend more on improving the family environment and less on education? As one writer points out, "the disagreements among educators, sociologists, and psychologists on learning theory, educational strategies, and relative values attended to the differing outputs of an educational system cannot be resolved by economists. The presence of fundamental and unsettled issues is not, however, a barrier to a careful assessment of both the economic and the educational aspects of alternative educational programs."[8] We must do the best we can, despite the difficulties of measurement. The fact is that all decisions in education are based on implicit assumptions on costs and benefits. The emphasis suggested here is that every effort be made to make these assumptions explicit, so that they can be examined, and even challenged, by others.

In the field of vocational education there has been some theorizing, particularly with respect to the "gains" obtained from vocational education. Consideration is given not only to private costs and benefits, but also to social costs and benefits.

One should make a distinction between the private rate of return and the social rate of return to education, although these concepts are extremely technical and complex. It might be noted, in passing, that there is reasonable evidence to support the conclusion that the private rate of return is higher than the social rate of return to education.[9] The reason for this uncertainty is that foregone earnings represent an unusually high private cost in the United States. Still, the issue remains and considerably more work must be done.

A second fundamental economic concept utilized by economists and applicable to education is that of "opportunity costs." For example, "economists define costs of production of a particular product as the value of the foregone alternative products which resources used in its production could have produced."[10]

In computing costs of education, educators generally look at the direct costs-teachers' salaries, books, buildings, and other resources used in producing educational outputs. What is ignored, although it may not be highly relevant in secondary education, are the foregone earnings of the students.

Probably one of the most useful tools of economic analyses is that of "elasticities" – of either supply or demand. All that is meant by the term "elasticity" is the sensitivity of demand or supply to changes in price or income.

Here the concept could easily be applied to the field of vocational education. How sensitive would an educational system be to a subsidy designed to expand vocational education.

It is quite evident that the economist is primarily concerned with applying the least amount of resources to a given output – the least cost principle. Within a given plant it is most desirable to operate at the lowest average cost, which point may not necessarily be that at which there is the fullest utilization of the capacity of the plant. In fact, the economist defines capacity as being at the point of lowest average cost.

How can this principle be applied to vocational education? A typical educational administrator usually

looks at the unused classroom space during the day, the night, or the summer and yearn for further utilization of capacity. What he might fail to recognize is that the *extra* (or incremental) cost of increasing utilization may exceed the *added* benefits.

This, in turn, leads to another economic concept which attempts to distinguish between decreasing or increasing costs within a given plant, or an educational institution, and economies or diseconomies of scale. These latter concepts can be understood in terms of whether a given school should expand its enrollment, given its existing plant, or whether it should establish another school, independent in operation. In the latter case, one may be confronted with rising administrative costs.

This is a difficult problem because one must be concerned not only with costs, but also with output. Is the educational product the same? In presenting the various tools of economic analysis and in illustrating their possible application to education there is an undertone of uncertainty as to the theory and the ability to obtain data. As in so many areas there is still much work to be done. Does this mean, then that these concepts are to be discarded pending further refinement? The answer is a flat "No!" for the following reasons.

First, and as had been suggested before, the decision-making process is concerned *implicitly* with costs and benefits and all that is being proposed is that the educational decision-maker provide *explicit* statements for the decision.

Second, when the process of decision-making is made explicit, an opportunity is given to others to examine, criticize, and make constructive suggestions on how the decision-making process might be improved.

Third, all areas of knowledge are confronted with the development of new and better theories and of testing them. Economics and the economics of education are no exception. But the only progress we can make is by developing new theories, testing them, and throwing them out into the market place of ideas for criticism.

Conclusion

An educational administrator has written that "some of our academic colleagues would deny the relevance of economic rationality to such a serious matter as education — economics is for the world of wheat, automation, and stock markets ... while ... education is the world of human learnings, scholarly inquiry, and freedom of the spirit."[11]

I am not asserting that the application of economic principles to education will automatically cure the many problems confronting it. It is being asserted that education is committed, if to nothing else, to the application of rationality to the decision-making process. It is the one institution in our society designed to safeguard our soceity because it is rational. To act in an irrational manner, like other institutions, is to deny the main purpose of education.

But the application, in a useful way, of such principles will take time, primarily because many concepts must be formulated more clearly and then adequate data obtained. What is needed now is the acceptance of these principles as "a way of thought" and, in time, we shall obtain better theories and better data and make better educational decisions.

FOOTNOTES

[1]Speech before the Annual Meeting of the Council of Chief State School Officers, November 17, 1969.
[2]*Ibid.*, italics added.
[3]*Ibid.*
[4]This section is taken from *New Directions for Vocational Education* by Carl J. Schaefer and Jacob J. Kaufman, 1970, D.C. Heath.
[5]Jesse Burkhead, et al., *Input and Output in Large-City High Schools*, Syracuse University Press, 1967, p. 18.
[6]*Ibid.*, p. 21
[7]*Ibid.*
[8]*Ibid.*, p.23.
[9]Mark Blaug "The Rate of Return on Investment in Education in Great Britain," *The Manchester School*, September edition, 1965.
[10]Richard H. Leftwich, *The Price System and Resource Allocation*, Revised edition, Holt, Rinehart, and Winston, 1960, p. 137.
[11]Allan M. Cartter, "Economics of a University," *American Economic Review*, Vol. LV, May 1965, No. 2, Papers and Proceedings, p. 481.

RESEARCH DIMENSIONS IN THE CAREER EDUCATION MODEL

— Cornelius Butler —

I'd like to start off by saying that I'm a bit apprehensive about the whole scheme of things. My apprehension began when I was presented the option of my comments. It's very difficult topic indeed. That apprehension increased today when I discovered that instead of the original agenda in which I'd be sharing this afternoon's activity with another speaker, that the whole thing rests on my shoulders to justify or to present a rationale for keeping you indoors today on a day that is obviously created to keep us out of doors. And I started to become a bit questioning as to whether this was part of a plot and then when I heard the comments at lunch about the authorities being in search of a baldheaded Catholic I started to feel that perhaps my paranoia was not totally unjustified.

I mentioned these fears to Joe Kelly on the way from lunch. He assured me that on one hand my analysis was totally correct but that this was the beginning of a new Federal-State relationship — New Jersey style — and so here I am.

This topic is a very difficult one. I think it was what Dr. Margules outlined this morning in a very few sentences in which he referred to Career Education. He was most cogent and most accurate. To see it as a program is true. I think also that the experimental aspects of the Career Education effort are much more paramount and will be consuming a great deal more of our energies and anxieties over the years ahead. His other point, which is very crucial to me because of the position that I hold in the Office of Education — the same position of those that work with me — is that we do have to have a full term to smooth out some of the assumptions and hypotheses that are imbedded in the whole Career Education concept. Of course this will only be realized with a great deal of sympathy and a certain amount of perseverance with out co-workers in the field — at the state, local and university level.

There are really two major areas of significance in the Career Education Development program as it now exists with the Office of Education. The first and foremost of these are the models themselves. And I was speaking about models plural not singular. There is, however, another issue

and, before I get into the major point, I would like to address that second issue. And that is the organizational structure within the Office of Education for carrying this work forward. With those of you in the research community I think that those organizational realities within OE right now are very important.

Up until this calendar year the National Center for Educational Research and Development had a posture for financing and supporting that research which is generally characterized by the term "unsolicited proposals." I'm sure you all know what that program is. Receipt within the office of proposals from universities, individuals, agencies and evaluation by the office and the appropriateness of each of those for funding.

Now it has become quite apparent during the last five years that there are serious defects in this program being maintained by the Federal Office of Education. The defects are, of course, that it is very difficult to judge the relative merits of these proposals; it's equally difficult to monitor the proposals and the projects and process and to administer the appropriate assistance from the Federal level. Perhaps the most critical defect is that, in the best of cases, what you end up with is scattering throughout the country of worthy, promising research efforts which, because of the geographical and institutional dispersion, are less capable of addressing national educational programs in a considered way.

For these and other reasons a division was established to come up with a better answer. At the beginning of this year this new division was established to flip the coin over, so to speak, and to have the Office of Education within certain amounts of its research and development dollars define key problematic areas within the country. At least at the initial points to define those issues and to begin the design of methods of programs that would address and, hopefully, solve the problems. The first programmatic thrust within this new stance is the Career Education models. I would also add by way of introduction, that there is, at the present time, within the Congress a bill for the establishment of the National Institute for Education which for all intents and purposes would be a new entity totally outside the Office of Education. The Institute would incorporate within its mandate, among other things, responsibility for most R & D activities which are now lodged within the Office of Education. It is generally accepted that when and if the Congress does establish the National Institute of Education that the three Career Education models would be among the first programs to be moved over to NIE. Therefore, our activities at the present time are being evaluated as perhaps an operational prototype of the stance that NIE may or may not, depending on its evaluation, take on its R & D activities when and if it's established.

So the Career Education models, in some respect, do have a great deal of significance in themselves, but also perhaps may bear watching from a point of view of being an insight into some operational procedures that may become typical to some degree of the National Institute of Education when and if it is established.

The three Career Education models were generated totally from within the Office of Education by the Office of Education staff. The assignment accepted in February was to design and develop a systematic approach to assess a wide variety of problem areas in American education.

Dr. Cornelius Butler
Assistant Director of Career Education
U.S. Office of Education

". . . the real action is going on out in the field."

The assignment was to select out those that promised, to some degree, to be reactive to a concentrated infusion of dollars and energies and also those which would have some kind of a systemic or ripple effect and would, if implemented, cause chain reactions within the parts of the systems.

I would like to give you an overview of the problem areas, mostly the research problem areas that were addressed prior to the designation of the three Career Education models. Even though the models were initiated as real world activities with the hope of addressing some of these problems, the models were also initiated very humbly because we realize that any sort of a real world activity to address even one national educational problem was extremely presumptuous. Therefore, we have not laid aside the research analyses which resulted in the establishment of the models. In fact, we are going to use the models themselves to feed back toward those original assumptions, toward those original research questions, to the models which will have a dual effect. They represent our best estimate of developmental activities that address the problems that they also, when operable, would have also had embedded within the mechanisms to feed back the research type of data which will enable us to reanalyze our assumptions about these original research questions.

We question, based on our own intuitions and on our own analysis of data, the following: the question of the assignment of occupational tasks training, skill training, to the traditional school and the whole question of the school dropout. Is a school dropout a stereotype or is a whole functional dropout really becoming endemic to the cross-section of students? The question of governmental policy at the national level — whether or not, for example, a sudden hypothesis which some claim to be true, that we are now in the period of controlled unemployment as a corrected fact of inflation.

We must know more about the collection and the means by which we collect micro data about jobs, unemployment, the match between job applicants and recipients of the job, the level of performance of people on the job and the correlation between prior training, and both the receipt of the job and competency while in it. A very serious question that was foremost in our thinking was the question of the social attitudes that are not prevalent in our society and particularly the social attitudes toward work. The nature and causes of unemployment quite clearly show the data of unemployment is not stereotypically associated with certain under privileged groups. It is not related as to the questions

of sex or to the question of race or age as data as recently as five or eight years ago has indicated.

The question of the relationship of curriculum to dropouts and to student alientation – and I'm separating dropouts and alienated students – I am not suggesting that they are one in the same. But the question of the relevancy of the curriculum to both of those categories is important. Is it true, as many of the dropouts and the alienated themselves indicate that the lack of relevancy in the traditional school curriculum was really quite that determinative of that alienation or of their decision to drop out of that school system? How relative is the whole question of defining or perhaps divining educational futures and educational structures? The three models cannot be justified, at least in terms of the significant amount of dollars being spent, as responses to problems as we now see them. Therefore, in designing these models we are also getting into the business of prediction.

The whole question of job change, career development as differentiated from a particular career and a more finite sense or a particular job is a part. What are the psychological effects of career changes? – the type of thing that is addressed in *Future Shock*. What are the social, the economic, the mental and the other characteristics of the dropout? One of our co-workers in the project, the educational policy research center at Syracuse has come up with some very interesting categorizations which very seriously cause us to change our perceptions of who the dropout is and who the alienated student is. They are finding with increasing regularity that the dropouts and the alienated are appearing in the middle and upper class income brackets and, in general, our stereotypes are being very significantly shaken.

We also wonder about the appropriateness of junior colleges and four year baccalaureate degree awarding colleges, not only in terms of the preceding school arrangements but also in terms of the career choices that would be made available later.

The recently emerging data about the shortening of the work week both in professional and non-professional categories, and the data that has existed over the last twenty years concerning the increased longevity force us to look at the role of education not only relative to work but also relative to the question of leisure.

Throughout several of these items that I have enumerated emerged the very obvious fact that we were not talking about statistics so much. We're not talking at least solely about labor, economics, job-placement, skill training, inflation, advantaged, disadvantaged, but we are also talking about the possibility of an X-factor which may be described as attitudinal change. These are all the pre-existent concerns that we looked at trying to get to development of the models. The last area that we looked at was the whole question of cognitive development – the locus in which it takes place and loci of places in which it is most likely to eventuate.

In short, it is implicit in the iteration of our concerns in the things we are willing to look at, Career Education at least in the Career Education Development Task Force and I'm separating that from the Commissioner's point of view and his attitude toward Career Education. I am also separating it from the point of view of the concept of Career Education as it may exist within the Bureau of Adult, Vocational and Technical Education, the operating bureau. The Task Force very quickly got us to assuming the interrelationship between vocational and academic aspects of the school experience at least within the three models. The Task Force quickly imposed on us the hope, the wish that new arrangements could be established which confront many of the existing arrangements and which would hopefully provide new ways at looking at both the meaning and style of the educational process. This confrontation, it was hoped, would provoke new solutions and even more hopefully than that – policy changes.

Now all that sounds pretty presumptuous. Perhaps it sounds overly ambitious, but let me describe the three Career Education models that we, in fact, are in the process of designing and implementing. You can then make your own judgment about whether we have made too grand a leap from our original thought process into the world of reality, or whether we have made the appropriate one.

Primarily I will limit myself to comments on three models. There are actually four, but the fourth one was not designed within the Office of Education and has only lately come under the jurisdiction and the general assistance that is available within the Career Education Development Task Force. The first of the three models is referred to as a *school-based model*. It is the most traditional of the three – but not necessarily the simplest. It involves activities in the six LEA's throughout the country. And those activities have been coordinated by the Center for Vocational-Technical Education at Ohio State University. Essentially the political justification of that model, and I'm not using "political" in any perjorative sense, is that to go forward seeking new innovative mechanisms in Career Education should not exclude the traditional public school system. We are not assuming that the public school system has not done as much as it is capable of in enhancing the whole Career Education notion, as it has been defined by the Commissioner.

The second of the two models, is referred to as the *employer-based model*. The political rationale of this model is the assumption that we have talked too long about the bridge between the world reality and the world of education. This model seeks to remove this bridge. We are designing a secondary school alternative that would be under the control of a consortium of employers. Employers are defined very broadly. It could be a local manufacturing concern or law agency, perhaps a state department of education, a social action agency or what have you. But the gist of the model is that the control – the actual decision-making process – would rest within that consortium. Here we are saying that the agencies external to the school system also perhaps have not done as much as they could have done to enhance the Career Education concept.

The problem addressed in model three, is essentially the problem of access. We are referring to this model as our *home-community based model*. We are trying within the confines of that model to make appropriate Career Education available to those who, for whatever reason, whether it's social or psychological or logistical or whatever, do not have a degree of access to appropriate education for their own career enhancement that others have especially through the traditional educational institutions.

The fourth model which I am not going to discuss in any degree is a model which is referred to as a *residential model*. It's presently based at the Glasgow Air Force Base, the former Air Force Base in Montana. It's a consortium of six states. Each of the six have legal commitments to the program that exists. Entire families will be brought to that location and educational reprocessing mechanisms will be initiated. At least one member of the family – in most cases the husband – will be given increased job and occupational skills. The wife and children also will be considered as part of the totality. When each of the families returns to its home state it will be guaranteed employment, and employment not at the typical low-entry point.

Within model three, we have some very significant questions, for example, the role of the Office of Education. Within that model, the activities of the first two years will probably be limited or circumscribed by the development of a national television program. The target audience is the woman in the home. The nature of the message is still fairly broadly defined as self-development.

The initiation by the Office of Education of certain mechanisms to set up the management of that program and the management of the ancillary and support systems that are necessary to it poses some very serious questions. For example, if and when we have completed our mission, within that model, whether the mission is designed or defined, as an adequate program of Career Education development for the woman, or whether that mission is defined as stimulating the use of media for the solution of national education problems, we have the question of *when* and *how* within the system of participating agencies, the Office of Education could bring all of that to a stop. Where is the locus of control, where is the locus of power? Especially in models two and three we are quite convinced that the relationship of the different elements of the system that we are inviting in, in fact which we must get into the performance, presents some research problems for which there is very little of antecedent nature and the correct analysis of which can be determinitive of the success or failures of the models.

In model one, the *school-based model*, and now I'd like to get down to the models separately, to designate some of the research concerns that we find implicit. The Office of Education's chief agenda as differentiated from that perhaps of Ohio State or perhaps of the participating LEA's is to determine whether or not local school systems, and admittedly we're choosing school systems that have already shown some capability or some sophistication in this particular direction, can establish an R & D aspect of the process of educating. That can be applied not only to Career Education but to any aspect of the entire education process. For us, this is equally important, to the question of Career Education. Also important is the question of identifying throughout the country different segments of curriculum which may be plugged into the given school systems for the achievement of certain goals within the Career Education paradigm.

In model two, and as I indicated earlier, both models two and three, in my opinion are much more innovative but not necessarily more easy or more difficult, one of the key questions is – given the sociological educational set of the past ten years, certainly since the passage of the Elementary Secondary Education Act can we set up a Career Education – a vocational education program – in a community that will attract a true cross section of student population?

The pressures against that are enormous. But unless we do achieve that, we will feel to some degree that we have failed and that original concept of that model has not been realized. Because we see in the model something that is appropriate for all students. The guts of the model is not limited to an attack on sociological-educational issues. It's a model that really finds it hypotheses as much in the cognitive and learning theory areas as elsewhere. Unless we can find out that this new environment, without the public school walls, is conducive to improving rates of learning, to styles of learning, at least as well as the traditional setting, then we will determine that which we have set up not to determine.

Within that model there are some very interesting research questions that can be classified as legal, i.e., the relationship of the consortium to the question of in loco parentis; the question of Child Labor Laws since some of the students that may be enrolled in that model may be under the working age and would be operating in industrial or commercial environments.

There are some very interesting cost benefit questions as well as funding questions. For example, will the participating agencies, that is, the members of the consortium wish to contribute for whatever reasons to the total educational expense, should the Office of Education or the local state agencies want them to? Our analysis indicates that as contributions from the participating members and work study program increase there is more of a tendency for the participating members to consider the students as a potential labor pool. This is not the purpose of the model. The purpose of the model is education in its broadest aspects. It undoubtedly would include some learning situations in which skills will be acquired, in which students will more easily and more effectively choose vocational areas. That is all to the good, but the essence of the model lies rather in the proposition that we should examine, for a multitude of reasons, the responsibility and the possibilities of learning situations other than those which are clearly traditional.

In model three – this is the *home-community based Model* – our original design addressed the question of the home learning center which is another way of stating the issue of access. At the present time, as I indicated, we are concentrating on only one aspect of the entire model and that is a T.V. program addressed to the self-development of the woman in the home. Eventually, however, we expect to go back to the original concept within which perhaps this T.V. program or set of programs might become secondary. Here there are such questions as the factors, the environments, that are more likely to induce more positive rethinking by the individual of his career status.

This gets to the question of program format within a T.V. program. Is the communication of specific information about jobs and about careers much more likely to induce positive thinking of this type? Should a program be attitudinal? If it's attitudinal then perhaps a format might be a soap opera or a panel show. A more difficult question that has been analyzed quite extensively in the

literature but the incident which still appears to be open is the capability of the media, especially T.V., to create such an environment.

What is the appropriate mix of attitudinal, informational, and instructional messages to get adults, women or men to take upon themselves the responsibility for analyzing their own career development and to assist them in assessing the appropriate mechanisms to improve it, to change it, or to decide that the current status is the one that they want.

In any set of activities of this type, of course, marketing research is very important. Marketing research does not usually come under the purview of educators. It is generally left to advertising agencies and other research agencies that are limited to supplying this information about the listening patterns and the behavioral patterns of the individuals vis-a-vis media. But our analysis of some of these procedures leads us to believe that we cannot totally rely on some of these existing mechanisms of producing marketing research because of the sensitivity and the seriousness of educational programs. In other words, we are not trying to sell Campbell Soup or Ford Automobiles and, therefore, we cannot let the dice roll quite as easily, and perhaps with quite the sense of abandon or with recourse to the gambling instinct that people in the commercial area may if they wish fall back upon?

In model three also we have a very severe problem and this is also true in model two, of evaluation of the effort. This is not a "Sesame Street" type program, although "Sesame Street" progenitors our efforts in model three. Really we are trying to do something more difficult, much more diffuse. The attempt to find measures that will determine the success or failure of our activities is quite difficult. It may be impossible! To say, however, that defining these measures is impossible is not an adequate answer. As any program coming out of the Office of Education, as you know, it will be held to standards of accountability. Not only by forces within the Office itself, but also by Congress. Whether they are reasonable standards or not is not the question. To mount a multi-million program national in nature, the goals of which may be very reasonable, very critical, but nonetheless amorphous and not susceptible to measurement, is something that is causing us a great deal of anxiety.

In model three and in model two, we have the question of supports systems. In model three, however, they are a bit different. The hope is to engender at the local level over time those components that are appropriate for the particular locality but which were nonetheless evolved out of and feedback into a national agenda and being represented by the T.V. program. It is our guess that in time the supports systems, whether they be mobile career clinics, the distribution of some kind of a sensitive process of cassettes, correspondence courses, perhaps even appropriate individual tutoring will diversify. It is our guess that these supports systems will really become the heart of model three – the *home community based model.*

In model three there is also a problem that exists in the other two models, and that is the political question. Perhaps I should make that political questions. In the other two models it is not so severe. Many times ' am sure you know the Office of Education mounts a program – a field that at the state or local level produces a reflex which analyzes the content or the presumed content in terms of the question whether the federal level is attempting to set educational policies, to establish national standards, to set in motion a series of events, whether for the better or the worse, may not be acceptable to some particular locality or community. In model one, because of the fact that we are operating in the school setting, the chances are that any such implications will not occur or if they do occur will be co-opted by the local educational agency and its environs.

In model two because of the fact that we are going outside although not totally outside the public school system, we already have set in motion certain apprehensions and anxieties from a variety of parts of the system or of the establishment. I would add tangentially there that our goal especially in model two is not to establish a parallel school system and not to encourage a proliferation of public school alternatives. Our primary goal is to establish something which through process of cognitive dissonance or through the process of comparison, through the process of some aspect of communication, we can hold up to the school system a different environment in which things will be attempted that they themselves have also attempted and to learn whether that new environment works more effectively or less effectively.

Back to the political ramifications of the models in model three, of course, the issue is most crucial. Because we have taken to the spoken word, words that can be generated through the electronic media, and therefore, very quickly; messages which can be changed in process practically by a variety of participants right down to the ultimate commentator on the T.V. show or within the T.V. program. This does pose tremendous responsibility to the Office of Education. On the one hand, we want something that is national in scope, but, at the same time, we don't want something which is not only national in scope and nationally meaningful, but also reaches that goal by being bland, non-decisive, non-information giving, and non-conductive to the correction of educational problems.

That is where we stand now. On the one hand the process has been very instructive and I emphasize this to those of you who are interested in your own research activities in organizational structures. The process has been very instructive to those of us in the Office of Education. We have been trying within the Office to establish this type of mechansim, this type of facility to set in motion ourselves and to follow along at least at some reasonable point the development of educational problem solutions. We realize that in the process we are going to need the assistance of, or at least the forbearance of, all key parts of the educational establishment.

I would say, in summary, that it has been a lot of fun. It has been very exhilarating; it's been very provocative; and we don't go home in the evening with the point of view that our lives are typically bureaucratic and that we are wasting away in some large monolithic structure in Washington while the real action is going on out in the field. As these models go forward – one of them incidentally is being implemented here in New Jersey up in Hackensack, model one – we look forward hopefully to your cooperation and to whatever advice you can give us along the way.

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